

Amendments to the Claims:

The following listing of the claims is provided in accordance with 37 C.F.R. 1.121:

1. (Currently amended) A method to seal a porous dielectric material comprising:

~~exposing the porous dielectric material that comprises reactive groups adjacent a surface of the material to a coupling agent comprising phosgene; and wherein the coupling agent reacts with the reactive groups adjacent the surface of the porous dielectric material to form coupling structures linked to the dielectric material, and further wherein the coupling structures are exposed to a sealing agent comprising a crosslinking agent, wherein the crosslinking agent comprises a multifunctional alcohol.~~

forming a porous dielectric layer adjacent the substrate layer with an exposed pore having an opening, wherein the exposed pore is disposed on at least one of a surface of the porous dielectric layer and a sidewall of a trench disposed within the porous dielectric layer; and

forming a barrier across the opening of the exposed pore, wherein the barrier comprises a first barrier molecule with a silicon atom coupled to a surface of one side of the exposed pore, a sulfur atom, and a flexible chain between the silicon atom and the sulfur atom, wherein the flexible chain comprises a portion of a bridge structure that is capable of sealing the surface of the exposed pore, and a second barrier molecule with a silicon atom coupled to a surface of an opposite side of the exposed pore, wherein the first and second barrier molecules are connected to each other across the surface of the exposed pore.

Claims 2-11 (Canceled).

12. (Currently amended) A method to seal a pore in a dielectric material structure comprising:

introducing a silane coupling reagent comprising a thiol end cap and at least one alkoxy side group reactive to SiOH at the surface of a pore, wherein a silicon atom of the silane coupling reagent is coupled to a sulfur atom of the thiol end cap, and a flexible chain is between the silicon atom and the sulfur atom , and wherein the at least one alkoxy side group reacts with SiOH at the surface of the pore to form coupling structures linked to the pore; and

introducing an oxidizing agent to form a disulfide bonds between two or more molecules of the silane coupling reagent that are linked to the surface of the pore to form a bridge structure that is disposed across the opening of the exposed pore adjacent oxidized thiol end caps, and wherein a silicon atom of the coupling reagent is coupled to a sulfur atom of the thiol end cap, and a flexible chain is between the silicon atom and the sulfur atom, wherein the flexible chain comprises a portion of a bridge structure that is capable of sealing the pore, wherein the bridge structure is disposed across the opening of the pore.

13. (Previously presented) The method of claim 12 wherein the flexible chain comprises a substantially long chain of CH₂ groups.

14. (Previously presented) The method of claim 13 wherein the substantially long chain of CH₂ groups comprises at least 4 CH₂ groups.

15. (Previously amended) The method of claim 12 wherein the at least one alkoxy side group is selected from the group consisting of O-ethyl, O-methyl, O-tertbutyl, and O-isopropyl.

16. (Previously presented) The method of claim 14 wherein the silane coupling reagent comprises three O-methyl side groups.

17. (Original) The method of claim 12 wherein the oxidizing agent comprises formaldehyde.

Claims 18-24 (Canceled).

25. (Currently amended) A method to seal an exposed pore in a dielectric material comprising:

exposing the exposed pore to ~~a at least one~~ coupling agent;

forming links coupling the ~~at least one~~ coupling agent to a surface of the pore;

exposing the exposed pore and the at least one coupling agent linked to the surface of the pore to an oxidizing agent; and

forming a disulfide bonds between two or more molecules of adjacent ones of the ~~at least one~~ coupling agent that are linked to the surface of the pore to form a bridge structure that is disposed across the opening of the exposed pore.

26. (Canceled)

27. (Currently amended) The method of claim 25 wherein the disulfide bonds ~~are-is~~ formed between a sulfur atom in an end cap of a first coupling agent molecule and a sulfur atom in an end cap of a second coupling agent molecule.
28. (Currently amended) The method of claim 25 wherein the ~~at least one~~ coupling agent comprises a flexible chain comprising a substantially long chain of CH₂ groups.
29. (Previously presented) The method of claim 28 wherein the substantially long chain of CH₂ molecules comprises at least four CH₂ groups.
30. (Currently amended) The method of claim 25 wherein the ~~at least one~~ coupling agent comprises an O-methyl group.
31. (Original) The method of claim 25 wherein the oxidizing agent comprises formaldehyde.